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ABSTRACT

Few studies have attempted to measure the strength of attachment in personal relationships or the stress associated with the loss of those relationships. To measure the perceived strength of attachment and stress of loss of 20 typical relationships (e.g.,wife or husband, father, son, daughter, brother, sister, friend, lover, grandparents, and casual acquaintance) and to determine how these scales correlate with the actual experience of relationship loss, 469 college students assigned numbers to relationships in proportion to their perceived magnitude of attachment or stress following a loss, in comparison to a standard modulus. In addition to making magnitude estimations, 117 subjects made magnitude judgments using a hand dynamometer. Subsequently, 352 college students from the original sample rated, on a 7-point scale, the degree to which they had experienced each of 26 emotional reactions (e.g., lonely, angry, depressed) and made each of 20 coping responses (confided in friends, formed new attachments, started to drink) to the loss of a relationship. An analysis of the results showed that subjects were able to provide consistent and reliable judgments of the strength of their attachments in these relationships, and of the stress associated with the loss of those relationships. The cross-modality matching validation was confirmed for both strength of attachment and stress of loss, indicating that subjects assigned the same magnitudes to the 20 relationships when they used numbers and when they used apparent force of handgrip. A high correlation was obtained between the stress of loss scale and the average ratings of emotional reactions and coping responses to loss. (Author/BL)

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PSYCHOPHYSICAL SCALING OF ATTACHMENT AND LOSS

by

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ABSTRACT

November 1982

Psychophysical Scaling of Attachment and Loss

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While the study of social relationships has a long history in psychology, few studies have attempted to measure the strength of attachment in those relationships or the stress associated with the loss of those relationships. The most stressful events in people's lives tend to be events involving the loss of a relationship. The purpose of the present research was to measure the perceived strength of attachment and stress of loss of twenty typical relationships, and to determine how these scales correlate with the actual experience of relationship loss.

Techniques of magnitude estimation were used to scale strength of attachment and stress of loss. Subjects were presented with lists of the twenty relationships and were asked to judge the relative strength of their attachment and the relative stress associated with the loss of those relationships. Subjects were instructed to assign numbers to the relationships in proportion to their perceived magnitude of attachment or magnitude of stress following a loss. The relationships that were rated include: wife or husband, mother, father, son, daughter, brother, sister, friend, lover, grandparents, and casual acquaintance.

In addition to making numeric magnitude estimations, 117 subjects made magnitude judgments using a hand dynamometer. These data were used to conduct a cross-modality validation of the magnitude estimation scales. Another 352 subjects rated the degree to which they had experienced each of 26 emotional reactions (e.g. lonely, angry, depressed, anxious) and made each of 20 coping responses (e.g. confided in friends, formed new attachments, started to drink) to the loss of a typical relationship.

The results indicated that subjects were able to provide consistent and reliable judgments of the strength of their attachments in these relationships, and of the stress associated with the loss of those relationships. The cross-modality matching validation was confirmed for both strength of attachment and stress of loss, indicating that subjects assign the same magnitudes to the twenty relationships when they use numbers and when they use apparent force of handgrip. A high correlation was obtained between the stress of loss scale and the average ratings of emotional reactions and coping responses to loss.

Psychophysical Scaling of Attachment and Loss

The primary purpose of the research that I am going to describe was to measure the perceived strength of attachment and stress of loss of twenty typical relationships. And, a secondary purpose was to determine how these scales correlate with the actual experience of relationship loss.

While the study of social relationships has a long history in psychology, few studies have attempted to measure the strength of attachment in those relationships or the stress associated with the loss of those relationships. There is abundant evidence that the most stressful events in people's lives tend to be events involving the loss of a relationship. As evidence I cite the work of Colin Parkes (1972) on the effects of widowhood, of John Bowlby (1969, 1973, 1980) on the effects of separation and loss among children, and of Robert Weiss (1975) on the effects of marital separation and divorce.

The method that I used to determine these scales was that of magnitude estimation, as described by S. S. Stevens (1972). 469 undergraduate subjects were presented with lists of the twenty relationships and were asked to judge the relative strength of their attachment and the relative stress associated with the loss of those relationships. The first relationship on each list was taken as the standard, against which each of the remaining 19 relationships were compared. For attachment, the standard was "Same Sex Friend", and for loss, the standard was "Opposite Sex Friend". Subjects were instructed to assign numbers to the relationships

in proportion to their perceived magnitude of attachment or magnitude of stress following a loss, in comparison to the standard modulus. The relationships that were rated include: mother, father, son, daughter, brother, sister, best friend, same sex friend, opposite sex friend, lover, grandparents, grandchildren, other relatives, three categories of wife or husband (newly wed; after 30 years of marriage, and after separation or divorce), and for baseline purposes the relations of casual acquaintance, pet, job, and home.

The resulting numeric magnitude estimations tended to be log-normally distributed, and therefore the geometric means of subjects' magnitude estimates for each of the 20 relations were used to develop the strength of attachment and the stress of loss scales.

The resulting scales for attachment and loss are very similar to one another. Both scales have geometric means that vary between 0 and 50. The relation that appears lowest on both scales is Casual Acquaintance. The relation that appears highest on both scales is Wife or Husband (after 30 years of marriage). These two scales and the position of relations on each scale are portrayed in Figure 1 of the handout. In general, spousal relations and son or daughter relations were placed at the upper end of both scales, followed by parent, sibling, and friend relations, with the baseline relations of pet, job, and home placed at the low end of both scales.

There are a number of differences between the two scales. First, there is a greater range in the geometric means of the loss scale than in the attachment scale. Whereas, the attachment scale varies from a low of

3.9 for Casual Acquaintance to a high of 36.4 for Wife or Husband (after 30 years of marriage), the loss scale varies from a low of 6 for Casual Acquaintance to a high of 44 for Wife or Husband (after 30 years of marriage). Second, since the two scales are directly comparable, we can compare the placement of relations on the two scales. For every relation, but one (Opposite Sex Friend), the magnitude estimate for stress of loss is greater than for intensity of attachment.

To determine the stability of the two magnitude scales, the total sample of 469 subjects was subdivided into groups according to age, gender, marital status, and sex role. Separate attachment and loss scales were then obtained for each group of subjects. These separate scales were correlated with one another, to determine how closely they agreed in terms of scale position for the twenty relations. The average correlation obtained in this way was $\underline{r} = 0.96$, indicating a high degree of consensus among subjects of diverse characteristics regarding the relative order and magnitude of attachment and loss stimuli.

To further establish the reliability of these two scales, both scales were cross-modally validated, using a hand-dynamometer. 117 of the total sample of subjects also made magnitude estimations of the 20 relations with a hand dynamometer, which measured force of handgrip. About half of these subjects made magnitude estimations of intensity of attachment, and the remaining subjects made magnitude estimations of stress of loss.

The paradigm for cross-modality validation requires that two sensory modalities be used to make magnitude estimations of a single stimulus

dimension. In this study, these two sensory modalities are represented by number matching, which has a characteristic exponent of 1, and force of handgrip as measured by a hand dynamometer, which has a characteristic exponent of 1.7 (Stevens, 1972). The cross-modality paradigm predicts that the slope of the best fitting line for a regression of force of handgrip on number matchin will equal the ratio of the characteristic exponents for number matching and force of handgrip. The predicted exponent, therefore, is 1.0 / 1.7 = 0.59.

The obtained slope for the regression line relating the scales for attachment was $\underline{b}$ = 0.72, and the slope for the regression line relating the scales for loss was $\underline{b}$ = 0.50. To assess statistically how close the obtained coefficients are to the theoretically predicted one of 0.59, 95 percent confidence intervals were constructed for the slopes (McNemar, 1969). The confidence interval for the attachment slope is: $0.57 < b < 0.87$; and the confidence interval for the loss slope is: $0.41 < b < 0.59$. Since both confidence intervals contain the predicted slope, this provides confirmation that for separate sensory modalities subjects provide comparable magnitude estimates of intensity of attachment and stress of loss for twenty typical relations.

The regression of force of handgrip on numeric estimation for attachments is displayed on Figure 2 of the handout, and the regression of force of handgrip on numeric estimation for loss is displayed on Figure 3 of the handout. As can be seen there, the regressions are quite linear in logarithmic coordinates.

Another 352 of the total sample of 469 subjects rated, on a seven

point scale, the degree to which they had experienced each of 26 emotional reactions (e.g. lonely, angry, depressed, anxious) and made each of 20 coping responses (e.g. confided in friends, formed new attachments, started to drink) to the loss of a typical relationship.

Each of these subjects completed a questionnaire that asked them about their experiences with the loss of one of the twenty relations described previously. To determine whether the scale of stress of loss as derived through the numeric magnitude estimation procedure had any content validity, the loss scale was correlated with the emotional reaction items and the coping items completed by this sample of 352 subjects. To reduce the number of items to be correlated, a principal components factor analysis was conducted on these items first, and the entire set of items was reduced to 4 factors reflecting somewhat different types of emotional reactions, and to 6 factors reflecting different ways of coping with the loss of a relationship. For each of the twenty relationships in the scale, a mean score was obtained on each of the ten factors, by summing the scores for items loading at least .40 on one of the factors, and then dividing by the number of items summed. The scale of loss was then correlated against the average ratings on each of these ten factors.

The factors and their correlations with the loss scale can be seen in Table 1 of the handout. With respect to emotional reactions, the scale of loss correlates .71 with a stress factor, .80 with an emotional reaction factor, .75 with a factor representing feelings of resentment, and only .28 with a happiness factor. The scale of loss shows somewhat lower correlations with factors derived from the coping items. These are also

displayed in Table 1, where you can see that the scale does show some moderate correlations with a cognitive preoccupation factor, an external involvement factor, and with a factor representing increased smoking and seeking professional help.

These correlations suggest that the scale of loss is moderately predictive of self-reported reactions to the loss of relationships, as well as of self-reported coping responses to the loss of relationships.

In conclusion the results of this research suggest that subjects are able to provide consistent and reliable judgments of the strength of their attachments in these relationships, and of the stress associated with the loss of those relationships. The cross-modality matching validation confirms the scales for both strength of attachment and stress of loss, indicating that subjects assign the same magnitudes to the twenty relationships when they use numbers and when they use apparent force of handgrip. And, finally the scale of loss is predictive of self-reported emotional reactions and coping responses to loss.

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TABLE 1

Correlations between the Scale of Loss and Factor Subscales

Factor Subscale	r_{xy}
Emotional Reaction Items:	
1 Stress	.71
2 Emotional Reaction	.80
3 Feelings of Resentment	.75
4 Happiness	.28
Coping Response Items:	
1 Cognitive Preoccupation	.69
2 External Involvement	.69
3 Attempts to Replace the Loss	.33
4 Consumptive Behaviors	-.07
5 Smoking/Professional Help	.70
6 Religious Involvement	.59

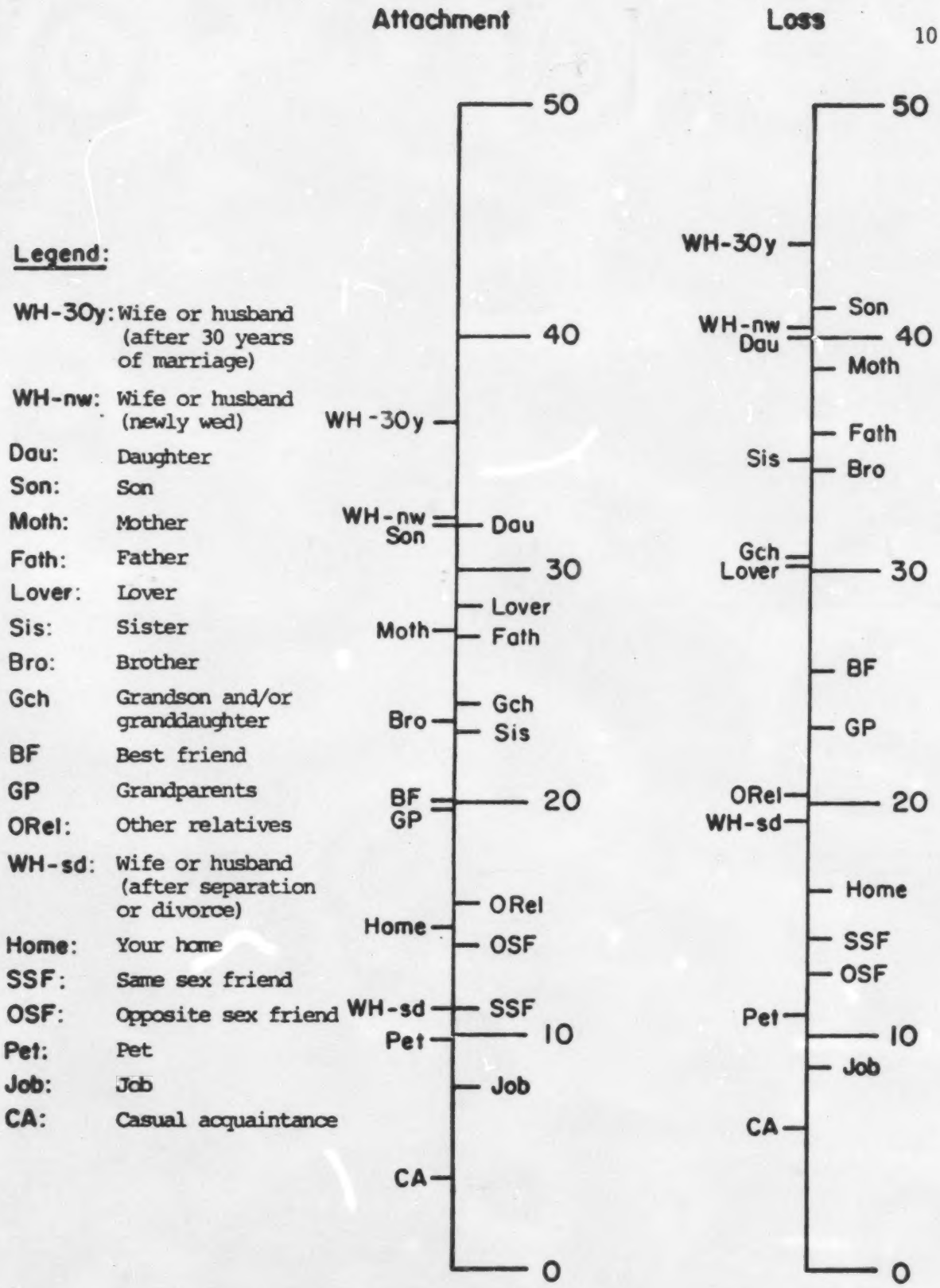

Figure 1 Degree of attachment and loss as expressed by numeric magnitude estimation ratings.

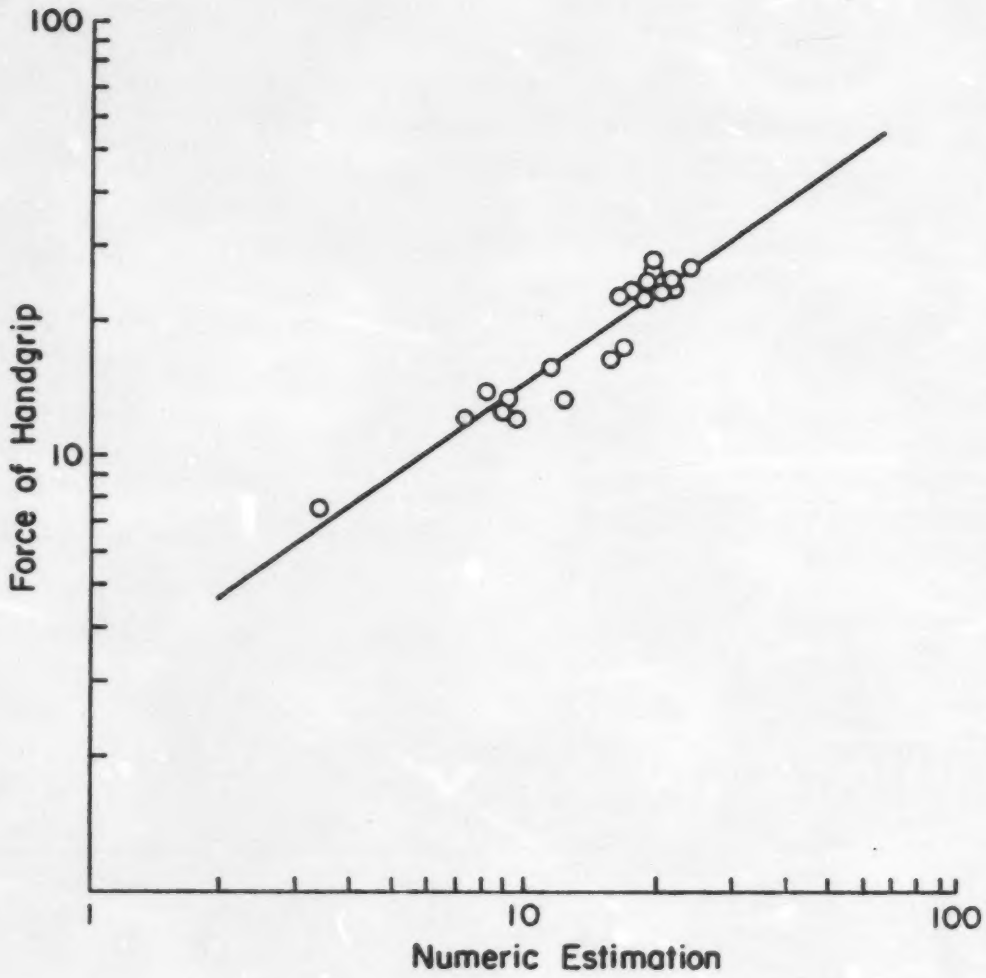

Figure 2 Regression in logarithmic coordinates of numeric estimation ratings on hand dynamometer ratings of attachment stimuli.

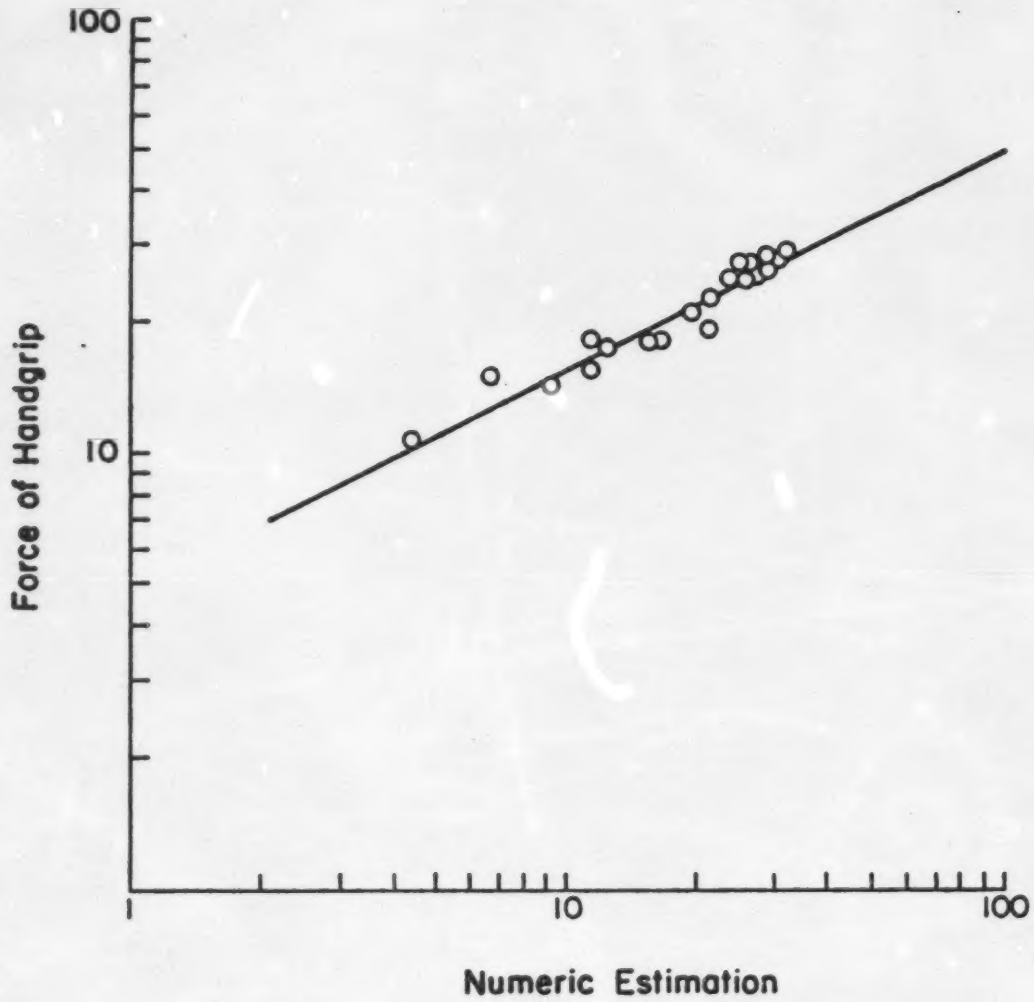

Figure 3 Regression in logarithmic coordinates of numeric estimation ratings on hand dynamometer ratings of loss stimuli.